Chapter 4. Practitioner Utilization by Type of Service

Introduction

Aggregate practitioner expenditures are based on three factors: the prices paid for the individual services, the number of services provided, and the combination or mix of services provided. Health insurers and HMOs attempt to control practitioner expenditures by influencing these factors. The structure of health plan benefit packages helps to determine which services are performed and how frequently. Over the last decade, private and public payers have gained increasing control over payment by direct negotiation on service prices with practitioners or by imposing fee schedules. The analysis of practitioner services at the individual service level provides the means to determine which services account for the majority of expenditures and how the mix of services received by insured populations differs.

This chapter examines practitioner utilization by the types of services delivered to patients. The first analysis addresses the services associated with the greatest expenditures by examining the twenty highest aggregate payment services for private payers and Medicare. The second group of analyses focuses on the quantity and mix of services provided to patients under the different types of insurance. To complete these analyses, MHCC grouped the thousands of service codes into summary service categories using the BETOS (Berenson-Eggers Type of Service) classification system. Each payer is characterized by the average number of services, payments, and work relative value units (RVUs) per recipient within each of the main service categories. The service mix of non-HMO recipients is then compared to that of HMO FFS services by looking at how the total number of services, payments, and work RVUs are distributed among the BETOS categories.

The sources and limitations of the data used for the analyses are discussed in Chapter 1. As in other chapters, the data set does not include dental services or HMO capitated services. Because of the limited HMO data set, the conclusions regarding HMO services are limited to those services reimbursed on a fee-for-service (FFS) basis. Additionally, the data used in the BETOS analyses excludes homegrown service codes. These are codes created by payers for their own purposes and cannot be assigned to BETOS categories. Data used in the BETOS analyses contained in this chapter is a subset of the information reported in Chapters 2 and 3.

High Aggregate Payment Services

The following analysis is this year's outcome of the 1993 statute establishing the Medical Care Data Base that directs the Commission to report on high cost services. Services are defined by CPT or HCPCS Level II codes.[1] Although it is useful to examine high cost services, it is important to caveat that some CPT codes are used by many

[1] CPT codes are defined by the Physicians' Current Procedural Terminology, American Medical Association and HCPCS Level II terms are classified by the HCFA Common Procedure Coding System, Health Care Financing Administration.

different types of practitioners and therefore occur frequently. In other instances, a single service code may represent the majority of services provided by a particular specialty. Evaluation and management (E&M) services are the most common service codes and are not included in the ranking of services but their reimbursements are counted in the payment totals. These codes are used frequently by many practitioners in conjunction with other procedures. To include these broad codes would produce rankings containing almost exclusively E&M procedures.

Tables 14, 15, 16 and 17 present the twenty services that account for the greatest expenditures for each of the four payer categories. These tables provide information on whether the services are in the top twenty list of high-volume services as well as the mean payment per service. Also included is the proportion of total payments accounted for by the particular service for 1998 and 1997 to allow an assessment of what changes are occurring.

TABLE 14
20 HIGHEST AGGREGATE PAYMENT SERVICES
PRIVATE NON-HMO - 1998*

1998 Rank	CPT-4/ HCPCS Codes	Description	Was this one of the top 20 volume services?	1998 Mean Payment	Percent Total Payments	
					1998	1997
1	90806	Individual Psychotherapy, Office (45-50 minutes) **	YES	94	%3.2	%0.0
2	59400	Obstetrical Care	NO	2,030	2.3	2.3
3	97110	Therapeutic Exercises	YES	35	1.2	1.1
4	88305	Tissue exam by pathologist	YES	84	1.1	0.8
5	59510	Cesarean Delivery	NO	2,058	0.8	0.7
6	97250	Myofascial Release	YES	31	0.7	0.4
7	97265	Joint Mobilization	YES	32	0.6	0.5
8	90807	Individual Psychotherapy, Office (45-50 minutes) w/E&M	NO	113	0.6	0.0
9	76092	Mammogram Screening	NO	59	0.6	0.2
10	70553	Magnetic Image, Brain	NO	773	0.6	0.5
11	93307	Echo Exam of Heart	NO	199	0.6	0.6
12	78465	Heart Image (3D) Multiple	NO	448	0.5	0.6
13	97530	Therapeutic Activities	YES	31	0.5	0.4
14	93000	Electrocardiogram, complete	YES	32	0.5	0.3
15	72148	Magnetic Image, Lumbar Spine	NO	464	0.5	0.4
16	90801	Individual Psychotherapy Interview	NO	110	0.4	0.6
17	45378	Diagnostic Colonoscopy	NO	379	0.4	0.4
18	76805	Echo Exam of Pregnant Uterus	NO	136	0.4	0.3
19	73721	Magnetic Image, Joint of Leg	NO	431	0.4	0.4
20	71020	Chest X-ray	YES	33	0.4	0.3

*This table excluded evaluation and management services (CPT-4 codes 99201-99499) in the determination of the top ranking services. Office visit payments were included in the total payments, however.
**This code was new in 1998 so the percent in 1997 was 0.0%.

TABLE 15
20 HIGHEST AGGREGATE PAYMENT SERVICES
PRIVATE HMO FFS - 1998*

1998 Rank	CPT-4/ HCPCS Codes	Description	Was this one of the top 20 volume services?	1998 Mean Payment	Percent Total Payments	
					1998	1997
1	59400	Obstetrical Care, Routine Antepartum Delivery	NO	2,046	%3.1	%7.6
2	90806	Individual Psychotherapy, Office (45-50 minutes) **	YES	94	2.0	0.0
3	59510	Cesarean Delivery	NO	2,096	1.0	2.5
4	97110	Therapeutic Exercises	YES	25	0.8	1.1
5	78465	Heart Image (3D) Multiple	NO	484	0.7	0.6
6	93307	Echo Exam of Heart	NO	213	0.7	0.7
7	90862	Medication Management	NO	95	0.6	0.9
8	88305	Tissue exam by pathologist	YES	77	0.6	0.1
9	43239	Upper GI Endoscopy, Biopsy	NO	318	0.6	0.2
10	93000	Electrocardiogram, complete	YES	32	0.5	0.1
11	J3490	Drugs Unclassified Injection	NO	428	0.5	0.2
12	45378	Diagnostic Colonoscopy	NO	370	0.5	0.1
13	56340	Laparoscopic Cholecystectomy	NO	807	0.5	0.1
14	45380	Colonoscopy and Biopsy	NO	400	0.5	0.1
15	59410	Obstetrical Care, Including Delivery and Postpartum Care	NO	834	0.5	0.0
16	58150	Total Hysterectomy	NO	1,018	0.5	0.0
17	70553	Magnetic Image, Brain	NO	553	0.5	0.6
18	93015	Cardiovascular Stress Test	NO	137	0.4	0.4
19	76805	Echo Exam of Pregnant Uterus	NO	137	0.4	0.3
20	76092	Mammogram Screening	NO	67	0.4	0.2

* This table excluded evaluation and management services (CPT-4 codes 99201-99499) in the determination of the top ranking services. Office visit payments were included in the total payments, however.
** This code was new in 1998 so the percent in 1997 was 0.0%.

Private Non-HMO and HMO FFS High-Payment Services

Services may be categorized as high-payment because they are expensive, occur in high volume, or are a mix of both of these attributes. As Table 14 indicates, the highest aggregate payment service for private non-HMOs in 1998, individual psychotherapy, accounts for 3.2 percent of all payments. Although its mean payment is only $94, individual psychotherapy is also one of the top twenty volume services. Other services with relatively low mean payments in 1998 are also among the highest aggregate payment services because they occur in high volume. These include therapeutic exercises, tissue exam by pathologist, myofascial release, joint mobilization, therapeutic activities, electrocardiogram, and chest x-ray. High aggregate payment services, such as obstetrical care and cesarean delivery, do not occur in high volumes, but are associated with relatively high mean payments. In non-HMO services 8 of the highest payment services are also highest in volume, compared to only 4 in HMO FFS.

There is considerable overlap between the lists of the twenty highest aggregate payment services in the private non-HMO (Table 14) and the HMO FFS (Table 15) sectors. Of the twenty highest payment services for the private non-HMO recipients, 12 appear in the highest twenty for the private HMO FFS recipients. Individual psychotherapy and obstetrical care are the top ranked services for both the private non-HMO and the private HMO FFS recipients. The percent of total payments attributable to individual psychotherapy increased by 3.2 percent for private non-HMOs and by 2.0 percent for private HMOs between 1997 and 1998. Obstetrical care accounts for 2.3 percent of total payments for the private non-HMO recipients and 3.1 percent of the total payments for the private HMO FFS enrollees.

The greater significance of obstetrical care in the HMO FFS services reflects the higher probability of pregnancy-related diagnoses in these services, discussed in Chapter 2. This difference can result from the higher proportion of young adults (18-34) in the HMO FFS patient population. In addition, women who are, or expect to become, pregnant may enroll preferentially in HMOs because of the more comprehensive coverage of pregnancy and well-baby care provided by HMOs. The higher probability of diagnoses for pregnancies with complications among the HMO FFS services (Chapter 2) is also reflected in these rankings, with cesarean delivery ranking higher and accounting for a greater share of total payments in HMO FFS than in non-HMOs.

Medicare Non-HMO and HMO FFS High-Payment Services

The services appearing in the Medicare non-HMO list of the twenty highest aggregate payment services are a mixture of high-payment services with relatively low volume, and low-payment, high volume services, as seen in the private sector services. For example, total knee replacement is not one of the top twenty services by volume but accounts for 1.9 percent of total Medicare non-HMO payments due to a mean payment of $1,832, yet an electrocardiogram, with a low mean payment of $30, accounts for 0.8 percent of total payments because it is a high volume service. Knee replacement and electrocardiogram also appear in the list of highest aggregate payment HMO FFS services. Like the private sector, greater overlap exists in the highest payment and highest volume services in Medicare non-HMO services than in Medicare HMO FFS services. Seven of the services for the Medicare non-HMO recipients are in both the highest twenty by volume of service and the highest twenty by payment. For Medicare HMO FFS, the overlap of the lists consists of only three services.

The highest payment services for the Medicare non-HMO and Medicare HMO FFS recipients reflect the older age of the Medicare population. The highest payment service for both the Medicare non-HMO (Table 16) and the Medicare HMO FFS (Table 17) recipients is cataract removal. This procedure is a relatively expensive service, at $821 and $866 per service for non-HMOs and HMO FFS, respectively, but that is not one of the highest volume services. Services for heart problems also appear with some frequency on both lists, as do cancer treatment services.

TABLE 16
20 HIGHEST AGGREGATE PAYMENT SERVICES
MEDICARE NON-HMO - 1998*

1998 Rank	CPT-4/ HCPCS Codes	Description	Was this one of the top 20 volume services?	1998 Mean Payment	Percent Total Payments	
					1998	1997
1	66984	Remove Cataract, Insert Lens	NO	821	%2.1	%2.9
2	A0320	Amb Basic Non-ER + Supplies	NO	116	1.3	N/A
3	J9217	Leuprolide Acetate Suspension**	NO	1,254	1.1	1.6
4	88305	Tissue Exam by Pathologist	YES	102	1.1	1.1
5	93307	Echo Exam of Heart	NO	231	1.0	1.1
6	78465	Heart image (3D) Multiple	NO	551	0.9	0.9
7	93000	Electrocardiogram, Complete	YES	30	0.8	0.8
8	92014	Eye Exam & Treatment	YES	59	0.8	0.7
9	Q0136	Non Esrd Epoetin Alpha Injection	NO	252	0.6	0.4
10	27447	Total Knee Replacement	NO	1,832	0.6	0.8
11	71020	Chest X-ray	YES	37	0.6	0.6
12	70553	Magnetic Image, Brain	NO	1,126	0.6	0.6
13	J9202	Goserelin Acetate Implant	NO	840	0.6	0.3
14	90921	ESRD Related Services, Month	NO	243	0.5	0.5
15	33533	CABG, Arterial, Single	NO	2,211	0.5	0.7
16	93010	Electrocardiogram Report	YES	13	0.5	0.5
17	11721	Debride Nail, 6 or more	YES	41	0.5	0.4
18	76092	Mammogram Screening	NO	65	0.4	0.3
19	92012	Eye Exam Established Pt	YES	41	0.4	0.4
20	77430	Weekly Radiation Therapy	NO	195	0.4	0.5

* This table excluded evaluation and management services (CPT-4 codes 99201-99499) in the determination of the top ranking services. Office visit payments were included in the total payments, however.
** Used in chemotherapy.
Note: N/A – data not available.

Differences between the rankings are attributable to the younger age of the HMO FFS recipients (Chapter 2), the specialized nature of the HMO FFS services, and possible differences in treatment practices. For example, in Medicare non-HMO recipients, the most common invasive cardiac procedure is coronary artery bypass graft, whereas for the Medicare HMO FFS recipients, the most common invasive cardiac procedure is coronary artery dilation. This difference may be due to the younger age of the HMO FFS recipients, or it may represent a more conservative approach to treatment on the part of HMOs. ESRD services appear in the list for the Medicare non-HMO recipients, but not for the Medicare HMO FFS recipients, since ESRD patients are excluded from HMOs.

TABLE 17
20 HIGHEST AGGREGATE PAYMENT SERVICES
MEDICARE HMO FFS - 1998*

1998 Rank	CPT-4/ HCPCS Codes	Description	Was this one of the top 20 volume services?	1998 Mean Payment	Percent Total Payments	
					1998	1997
1	66984	Remove Cataract, Insert Lens	NO	866	%2.2	%2.6
2	78465	Heart image (3D) Multiple	NO	525	1.9	2.6
3	27447	Total Knee Replacement	NO	1,970	1.9	0.2
4	93510	Left Heart Catheterization	NO	3,121	1.8	N/A
5	93307	Echo Exam of Heart	YES	216	1.4	2.2
6	43239	Upper GI Endoscopy Biopsy	NO	390	1.0	0.8
7	J9217	Leuprolide Acetate Suspension**	NO	1,041	0.9	0.7
8	93000	Electrocardiogram, Complete	YES	30	0.8	0.3
9	27130	Total Hip Replacement	NO	3,361	0.8	0.0
10	45378	Diagnostic Colonoscopy	NO	362	0.8	0.8
11	77430	Weekly Radiation Therapy	NO	263	0.8	0.7
12	88305	Tissue Exam by Pathologist	YES	81	0.7	0.2
13	45385	Colonoscopy, Lesion Removal	NO	464	0.7	0.7
14	99070	Special Supplies	NO	153	0.7	0.2
15	92982	Coronary Artery Dilation	NO	3,349	0.7	N/A
16	Q0136	Non Esrd Epoetin Alpha Injection	NO	405	0.7	0.1
17	J3490	Drugs Unclassified Injection	NO	328	0.6	0.0
18	93015	Cardiovascular Stress Test	NO	126	0.6	1.1
19	A0320	Amb Basic Non-ER + Supplies	NO	106	0.6	0.0
20	93880	Extracranial Study	NO	178	0.6	1.2

* This table excluded evaluation and management services (CPT-4 codes 99201-99499) in the determination of the top ranking services. Office visit payments were included in the total payments, however.
** Used in chemotherapy.
Note: N/A – data not available.

Utilization by Type of Service and Payer

The analyses in this section focus on the mix and average level of services used by the patients of each payer. In the data reported by the payers to the Maryland Health Care Commission, medical services are coded using primarily standard coding systems (CPT-4 and HCPCS) that involve thousands of codes. To facilitate comparisons of service mix, service codes were grouped into a smaller number of clinically meaningful categories. This grouping was accomplished using a classification system developed for HCFA called the Berenson-Eggers Type of Service (BETOS) after its authors.[2] The BETOS system is flexible, in that it allows for different levels of aggregation, from seven major categories to about a hundred secondary categories. Most of the tables included in the body of this report that involve a breakdown by service category use a slight modification of the seven-category BETOS classification. These tables list

[2] A description of the BETOS categories and a mapping of procedure codes to BETOS categories can be found on the HCFA website at http://www.hcfa.gov/stats/cpt/btos.htm.

immunizations as a separate category and combine "other" and "unclassified" into a single category. Some of the tables included in the Appendix use the more detailed BETOS classification system. The seven major BETOS categories are described in the text box below.

Berenson-Eggers Type of Service Classification System

1. ***Evaluation and Management (E&M):*** These services include visits to a doctor's office, visits to a hospital clinic or emergency department, a home visit, and visits by a practitioner to a nursing home resident.

2. ***Procedures:*** The procedures category includes anesthesia and various surgical procedures, as well as endoscopies and renal dialysis services.

3. ***Imaging:*** Imaging includes various services that allow a practitioner to visualize internal structures using non-invasive technology such as X-rays, magnetism, or ultrasound.

4. ***Tests:*** Tests include examinations of blood, urine, etc., in a laboratory; the drawing of blood; and various electrical monitoring of heart or brain activity.

5. ***Durable Medical Equipment:*** This category involves the provision of medical supplies, surgical supplies, and orthotics.

6. ***Other:*** This category is a catchall for services not included in one of the more specific categories.

7. ***Exception/Unclassified:*** This category includes undefined codes.

Average Utilization of Practitioner Services by Service Category and Payer

Figures 1, 2, and 3 characterize each payer category's typical utilization of practitioner services by focusing on the mean number of services, payments, and work RVUs, respectively, per recipient (user of services) for the major BETOS categories.[3] [4] Mean utilization is highest for Medicare beneficiaries in every service category. Within both Medicare and private insurers, lower utilization may occur in HMOs due to the absence of capitated HMO services.

[3] A discussion of work RVUs is presented in Chapter 2.

[4] It is important to bear in mind that these mean values do not represent the actual averages within each service category. Rather, average total utilization is allocated across the BETOS categories using the related distribution for each payer. The sum of the values for each BETOS category equals that payer's average total utilization in terms of services, payments, and work RVUs. Total services, expenditures, and RVUs can be derived by summing utilization across the six BETOS categories for each payer. For example, in Figure 1 total services per recipient for non-HMOs are 13.0, for HMO FFS 7.9, for Medicare non-HMO 34.9, and for Medicare HMO FFS 14.5.

Figure 1
Mean Number of Services Per Recipient by Service Category and Payer - 1998

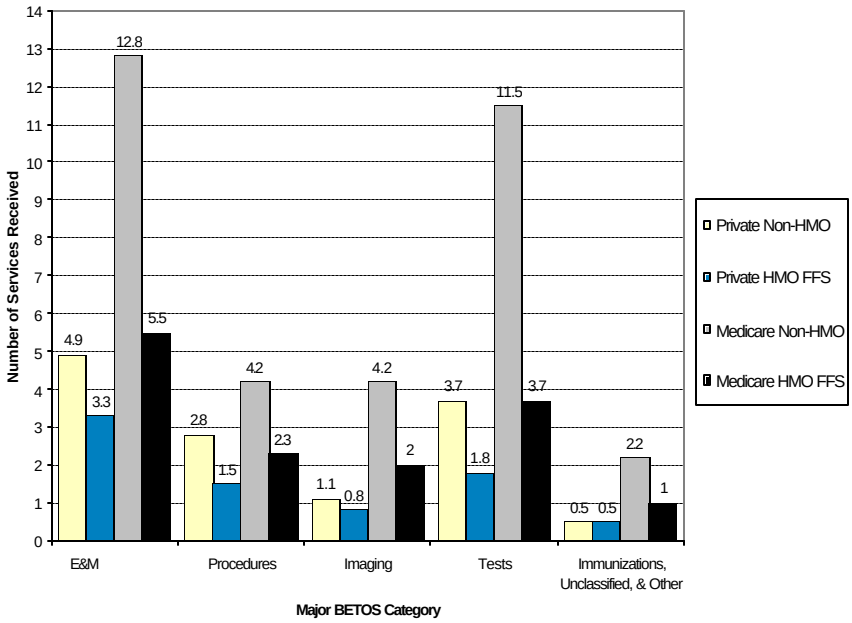


Figure 1, which depicts the average number of services per patient, shows that the order of importance of the service categories, in terms of average service volume, is the same for three of the payers: private non-HMO, private HMO FFS, and Medicare HMO FFS. Enrollees receive the most services for E&M, followed by tests, procedures, imaging, and immunizations/other services. Medicare non-HMO beneficiaries also reflect this order, but they tend to receive equal numbers of procedures and imaging services.

Private Market Comparisons: Services

Although private HMO enrollees receive about 39 percent fewer FFS services on average than do private non-HMO enrollees, this gap is not constant across the service categories.[5] In fact, there is no difference in the number of immunization/other services reimbursed by FFS for these populations. This may result from a combination of factors including a higher immunization rate in HMO enrollees, a larger proportion of children in the HMO patient population (see Chapter 2), and the possibility that immunizations may be more likely to be reimbursed on a FFS basis than under capitation. The use of childhood immunizations as a quality measure under HEDIS may provide the incentive for HMOs to use FFS reimbursement as a means to ensure that immunizations are reported to the HMO. The biggest difference between the two payer categories occurs in tests: private HMO FFS services average 51 percent fewer tests compared to private non-

[5] Summing utilization across the six BETOS categories for each payer can derive total services, expenditures, and RVUs. For example, in Figure 1 total services per recipient for non-HMOs are 13.0, for HMO FFS 7.9, for Medicare non-HMO 34.9, and for Medicare HMO FFS 14.5.

HMO services. The large difference in tests may indicate that these services are especially likely to be capitated by HMOs. Another explanation is that HMOs may more tightly manage these services. The gap between the populations in the use of procedure services is nearly as great at 46 percent for the BETOS category, procedures. The FFS E&M and imaging differences are smaller than the overall difference at 33 and 27 percent, respectively.

Medicare Comparisons: Services

Although the relative differences in use of FFS services are greater between the HMO and non-HMO populations under Medicare than under private insurance, the BETOS category, tests had the greatest difference in service level. Average use of FFS tests is about two-thirds lower in the Medicare HMO population compared to Medicare non-HMO recipients, in part perhaps due to capitation and tighter management of tests under HMOs. The HMO-to-non-HMO gap for the other major BETOS categories are below the overall 58 percent difference, ranging from 57 percent less E&M in Medicare HMO FFS services to 45 percent fewer procedures.

Figure 2
Mean Total Payment Per Recipient by Service Category and Payer - 1998

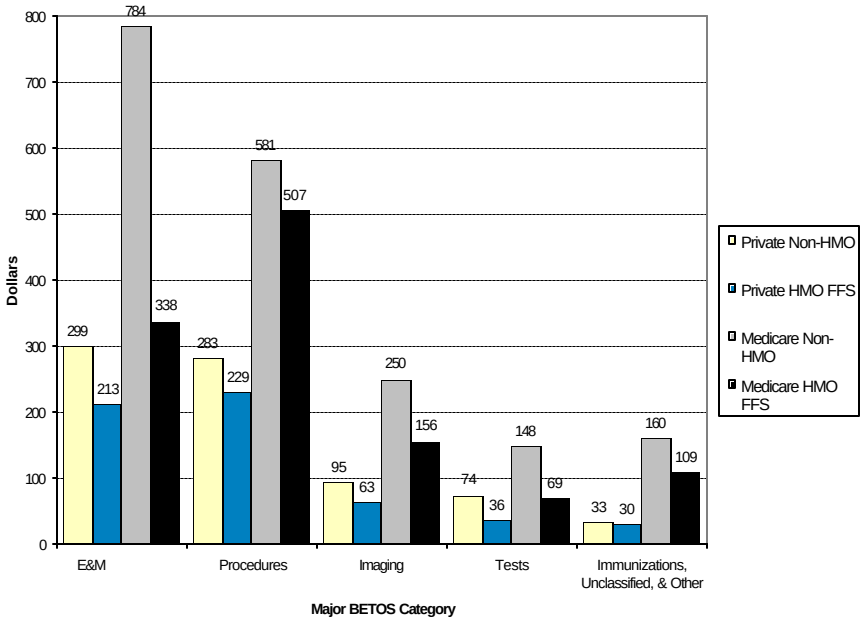


Figure 2 presents the mean total payment per recipient allocated across the service categories. This graph shows that the payment order of the service categories differs from the order in average service volume shown in Figure 1. As expected and following the service volume pattern, the mean HMO reimbursements are below the non-HMO reimbursements for every BETOS category. However, for all payers, the significance of procedures in terms of payments is greater than their importance in service volume. Conversely, tests are less significant for all payers. In HMO FFS private and Medicare services, procedures rank first in mean total payments, respectively, while in the non-HMO services the mean payments allocated to procedures ranks second after E&M.

These changes reflect the fact that procedures, which include all surgeries, tend to be more complex and therefore more expensive than the services in the other categories. This payment difference appears greater in the HMO FFS services, possibly because the HMO procedures that are paid on a FFS basis tend to be the more specialized and more expensive procedures. The lower ranking in payments for tests, compared to its rank in service volume, results from the fact that most tests are relatively inexpensive. In fact, among Medicare beneficiaries the mean payments allocated to tests are the lowest of all service category payments.

Private Market Comparisons: Payments and RVUs

Among the private insurers HMO FFS total mean payments per recipient at $571 are 27 percent less than non-HMO total payments at $784 showing a smaller percentage gap than in service volume. This overall smaller difference is driven mainly by services in the procedures category where the HMO to non-HMO gap in payments, $229 vs. $283 is just 19 percent, and, to a lesser extent E&M services, where the payment gap at $214 vs. $299 is 29 percent. Both of these payment percentage gaps are smaller than the percent differences in service volume because HMO FFS E&M services and procedures tend to be more complex, and therefore, relatively more expensive than the non-HMO services in these categories. The payment differences in the other categories are similar to or greater than the respective service volume differences.

The service complexity – measured in average number of work RVUs per service – of HMO FFS procedures and E&M services are 1.93 and 1.08, respectively, compared to the respective non-HMO values of 1.13 and 0.98.[6] On average HMO FFS procedures are about 71 percent more intensive than non-HMO procedures, and HMO FFS E&M services are about 10 percent more intensive. However, the complexity of services in the remaining service categories is very similar for imaging (0.54 HMO vs. 0.55 non-HMO) and tests (0.24 vs. 0.26), and for immunizations/other services the non-HMO services are about 12 percent more intensive than the HMO services (0.60 vs. 0.68). Tests are the least intensive type of service for either payer making this category the least expensive service. The overall difference between these payers in service intensity is 27 percent, identical to the relative difference in their total mean payments.

Medicare Comparisons: Payments and RVUs

Among the Medicare insurers, HMO FFS total mean payments, $1,179, are 39 percent less than non-HMO total mean payments, $1,923, a smaller relative gap than for service volume as seen in the private payers. Unlike the private sector, all of the service categories are involved in this difference to some degree. Once again, the principal driver is the procedure category, where the HMO to non-HMO gap in payments, $507 vs. $581, is just a 13 percent difference. The smaller relative gap for payments compared to service volume results from the fact that Medicare HMO FFS services are more complex than non-HMO services regardless of service category. The service complexity – measured in average number of work RVUs per service – of HMO FFS procedures is

[6] Mean work RVUs per service and mean payment per work RVU are not included in any tables in this chapter so these values are presented in the text.

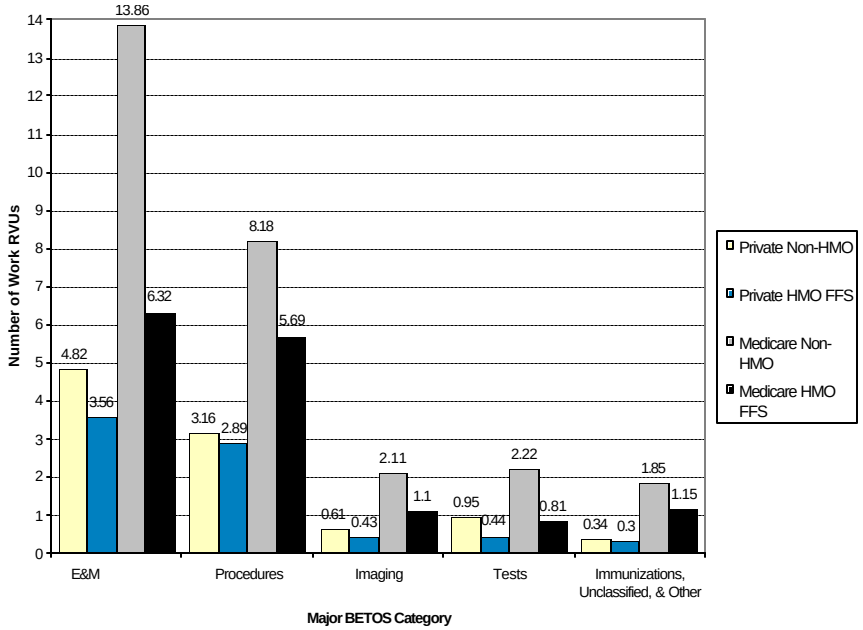
2.47 compared to non-HMO procedures at 1.95, making HMO FFS procedures about 27 percent more intensive, on average, than non-HMO procedures. Compared to non-HMO services, HMO FFS services are more intensive by 37 percent for immunizations/other services (1.15 vs. 0.84), 9 percent for imaging (0.55 vs. 0.50), 13 percent for tests (0.22 vs. 0.19), and 6 percent for E&M services (1.15 vs. 1.08). The overall difference between these payers in service intensity is nearly 28 percent, close to the private sector difference in spite of the age difference of these populations.

Concerning payment rates per RVU, differences vary among the payers by service type. A comparison of the average overall payment per RVU in Chapter 2 indicated that private non-HMOs paid the highest rate for overall services followed by Medicare HMO FFS, private HMO FFS, and lastly, Medicare non-HMO. Among the private payers, average per RVU payment is about 6 percent lower in HMO FFS services. The largest difference in per RVU reimbursement occurs for procedures (nearly 12 percent less), but for tests and immunizations/other services the HMO FFS payment rates are about 5 and 3 percent above the non-HMO rates, respectively. (Data not shown.) For Medicare, the average per RVU payment is about 15 percent higher in HMO FFS services. The largest difference in Medicare reimbursement occurs for tests and procedures, 25 and 28 percent higher respectively for Medicare HMO FFS. However, for E&M the HMO rate per RVU is about 5 percent below the non-HMO reimbursement rate. (Data not shown.)

Figure 3 depicts the mean number of total work RVUs per recipient allocated across the major service categories for each payer. All payers, excluding Medicare HMO FFS, show the same overall pattern in terms of ranking. Total average RVUs are the highest for E&M, followed by procedures, tests, imaging, and the immunizations/other services category. For Medicare HMO FFS enrollees, immunizations/other services ranks third while tests rank last. Generally, the pattern of RVUs and payments is expected to be similar since services that deliver more RVUs are generally reimbursed at higher levels. However, the RVUs used in these analyses are limited to work RVUs. For imaging services in particular, the exclusion of office practice RVUs that capture capital equipment costs results in this service category ranking lower in mean RVUs than in payments. As discussed earlier, the greater mean significance of immunizations/other services in the work RVUs of Medicare HMO FFS services results, in part, from the high complexity of the services delivered.

Compared to payment differences between private non-HMO and HMO services their percent differences in RVUs are smaller, the payment differences being amplified by the higher per RVU reimbursement for private non-HMO services. In Medicare payers, the RVU differences tend to be greater than the payment differences; the higher reimbursement rates for HMO FFS services lessen the impact of the higher utilization by Medicare non-HMO recipients.

Figure 3
Mean Number of Work RVUs Per Recipient by Service Category and Payer - 1998



Differences in Service Mix by Delivery System

A comparison of service mix differences in non-HMO and HMO settings is of particular interest to policymakers because of the continuing uncertainty on how HMOs achieve savings. This section compares the mix of practitioner services delivered to recipients of non-HMO and HMO FFS services; first for the privately insured population, then for Medicare beneficiaries. Service mix is defined in Tables 18 and 19 by how the number of services, payments, and work RVUS are distributed among the BETOS categories. In comparing the service mix, it is important to keep in mind that capitated HMO services data are not included in either private HMO FFS or Medicare HMO FFS service mix distributions. It is also important to remember that the level of utilization varies significantly among the payer categories with the highest level under Medicare and lowest under private HMO FFS. A comparison of the payers first focuses on the major BETOS categories and then examines how the mix of services within the major BETOS categories differs.

Comparisons of Private Payers

Table 18 provides information on the relative distribution of number of services, payments, and work RVUs for the private non-HMO and private HMO FFS recipients.[7] Among the private payers, both non-HMOs and HMOs share a similar distribution for the volume of services provided in the five major BETOS categories. The most common practitioner service is for E&M, followed by tests, procedures, imaging, and

[7] Appendix G presents a more detailed breakdown of the BETOS presented in Tables 18 and 19.

immunizations. However, the likelihood of these services varies by the two payer types. Compared to non-HMO services, HMO FFS services are 11 percent more likely to be for E&M (41.7 vs. 37.7 percent) and 18 percent more likely to be for imaging (10.0 vs. 8.5 percent). Conversely, HMO FFS services are 20 percent less likely to be tests (22.8 vs. 28.6 percent) and 9 percent less likely to be procedures (19.6 vs. 21.5 percent) than are non-HMO services. Immunizations and other services represent the smallest proportions of services for both non-HMOs and HMOs. Relative to non-HMOs, HMO FFS services are more than twice as likely to be for immunizations and 38 percent more likely to be for the broad category of other services.

The greatest proportion of all payments made by private non-HMOs goes toward E&M, followed by procedures, although the reverse is true of private HMO FFS payers. Compared to the non-HMO payment shares, HMOs' share of E&M is 2 percent less for E&M and 11 percent more for procedures. Tests comprise only 10 percent of all non-HMO payments. Tests account for 6 percent in the payment distribution of HMOs, but relative to non-HMOs, HMOs' FFS payment share for tests is 34 percent smaller, and its payment share for imaging is 8 percent smaller. Immunizations and other services represent the smallest proportions of payments for both non-HMOs and HMOs, but HMOs payment share for these service categories is 36 percent greater than the non-HMOs payment share.

Compared to the payment distributions, private payer work RVUs are more concentrated in E&M, less in procedures but especially concentrated in imaging services. E&M comprises the greatest proportion of work RVUs associated with both private non-HMO and HMOs, and procedures comprise the second highest proportion for both payers. This difference in the payment and RVU concentrations is due to lower per RVU reimbursement rates for E&M services compared to the payment rates for procedures. This finding suggests that many payers continue to use reimbursement mechanisms that reward E&M services less favorably relative to surgical and imaging services. E&M and procedures comprise the vast majority of all services representing 80 percent of all work RVUs for non-HMOs and 85 percent of all work RVUs for HMOs. However, compared to non-HMOs, HMO FFS services are associated with a 5 percent smaller share of work RVUs for E&M and an 18 percent greater likelihood of procedures. The greatest difference in work RVU shares for major BETOS categories occurs in tests. Although tests comprise the third highest proportion of work RVUs for both payer types, the HMO work RVU share is 41 percent smaller than the non-HMO share. Imaging services' shares of work RVUs are about half their payment shares for reasons discussed in the preceding section. The share of work RVUs attributed to imaging services in HMO FFS services is 8 percent smaller than in non-HMO services. Immunizations are associated with a 50 percent greater share of work RVUs compared to non-HMOs, for reasons discussed earlier.

Table 18 also contains conditional probabilities that enable direct payer comparisons of the types of services that comprise the major BETOS categories by adjusting for differences in utilization distributions. The conditional probabilities are simply the intra-category percentages. Within E&M services, office-based services account for the majority of E&M utilization (in service volume, payments, and RVUs) for both payers. But office-based services comprise more of the non-HMO E&M utilization than of the HMO FFS E&M utilization. Conversely, more complex E&M services – those provided by specialists and consultants, delivered in emergency rooms, or provided to hospital inpatients – constitute more of HMO FFS E&M utilization. For example, HMO FFS E&M payments and RVUs are 1.9 and 1.8 times as likely, respectively, to be for emergency room services as are non-HMO E&M services. The prevalence of more service-intensive E&M in the HMO FFS services explains the higher average service intensity of HMO E&M compared to non-HMO E&M presented in the preceding section.

The 71 percent greater service intensity of HMO FFS procedures compared to non-HMO procedures discussed earlier is also reflected in the conditional probabilities of Table 18. Within procedures, minor procedures rank first in procedure payments and RVUs in non-HMO procedures, but maternal/other procedures (e.g., obstetric care, vasectomy, and tonsillectomy, adenoidectomy under age 12) rank first in these measures among the HMO FFS procedures. Specifically, non-HMO procedure payments and RVUs are 1.5 and 1.7 times as likely, respectively, to be for minor procedures as are HMO FFS procedures, while payments and RVUs for maternal/other procedures are 1.4 and 1.3 times more common among HMO FFS procedures than non-HMO procedures. Other relatively more complex procedures are also more common (in service volume, payments and RVUs) in HMO FFS procedures. These include endoscopy, and ambulatory procedures (e.g., tympanostomy, and dermatological procedures such as destruction/excision of lesions, excision of nails, removal of skin tags).

Regarding imaging services and tests, the conditional probabilities for utilization of imaging services do not differ much between private non-HMO and HMO services. Echography services are somewhat more common (in service volume, payments, and RVUs) in imaging services provided to HMO patients, while both standard and advanced (MRI & CAT) imaging services are more common in the non-HMO imaging services. The mix of tests, however, is clearly different for the two payer types. Utilization of laboratory tests is roughly twice as common among non-HMO tests as in HMO tests.

TABLE 18
DISTRIBUTION OF TOTAL SERVICES, PAYMENTS, AND WORK RVUs IN PRIVATE NON-HMO AND HMO BY SERVICE CATEGORY - 1998: PERCENTAGES AND CONDITIONAL PROBABILITIES (CP)

BETOS Category*	Non-HMO						HMO					
	Total Services		Total Payment		Total Work RVUs		Total Services		Total Payment		Total Work RVUs	
	%	CP	%	CP	%	CP	%	CP	%	CP	%	CP
Total E&M	**%37.7**		**%38.2**		**%48.8**		**%41.7**		**%37.3**		**%46.6**	
E&M-ER	1.3	%3.4	2.1	%5.5	2.4	%4.9	2.9	%7.0	3.8	%10.2	4.2	%9.0
E&M-Home	0.0	0.0	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.3	0.1	0.2
E&M-Hospital	1.6	4.2	2.7	7.1	3.4	7.0	2.7	6.5	3.9	10.5	4.8	10.3
E&M-Nursing Home	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.0	0.0	0.1	0.2
E&M-Office	25.9	68.7	20.7	54.2	26.6	54.5	24.8	59.5	16.5	44.2	20.0	43.3
E&M-Spclst/Consults	8.8	23.3	12.6	33.0	16.3	33.4	11.1	26.6	13.0	34.9	17.2	36.9
Total Imaging	**8.5**		**12.1**		**6.2**		**10.0**		**11.1**		**5.7**	
Imaging-Advanced (MRI&CAT)	1.0	11.8	4.1	33.9	1.7	27.4	1.1	11.0	3.4	30.6	1.5	26.3
Imaging-Echography	1.8	21.2	3.3	27.3	1.6	25.8	2.3	23.0	3.4	30.6	1.5	26.3
Imaging-Heart	0.1	1.2	0.2	1.7	0.1	1.6	0.1	1.0	0.2	1.8	0.1	1.8
Imaging-Other	0.1	1.2	0.2	1.7	0.1	1.6	0.1	1.0	0.2	1.8	0.2	3.5
Imaging-Standard	5.5	64.7	4.4	36.4	2.7	43.5	6.3	63.0	3.9	35.1	2.4	42.1
Total Procedures	**21.5**		**36.1**		**32.0**		**19.6**		**40.1**		**37.9**	
Procedure-Ambulatory	1.3	6.0	4.5	12.5	4.0	12.5	1.9	9.7	6.3	15.7	5.6	14.8
Procedure-Anesthesia	1.2	5.6	3.4	9.4	0.0	0.0	0.4	2.0	2.0	5.0	0.0	0.0
Procedure-Dialysis	0.1	0.5	0.2	0.6	0.2	0.6	0.2	1.0	0.4	1.0	0.5	1.3
Procedure-Endoscopy	0.9	4.2	5.4	15.0	4.5	14.1	1.5	7.7	7.3	18.2	6.6	17.4
Procedure-Eye	0.1	0.5	1.1	3.0	0.9	2.8	0.1	0.5	1.0	2.5	0.9	2.4
Procedure-Major-Cardiovascular	0.2	0.9	1.8	5.0	1.7	5.3	0.3	1.5	2.0	5.0	1.8	4.7
Procedure-Major-Orthopedic	0.1	0.5	1.5	4.2	1.5	4.7	0.2	1.0	1.9	4.7	2.1	5.5
Procedure-Major-Breast, Colectomy	0.1	0.5	1.7	4.7	1.8	5.6	0.2	1.0	2.1	5.2	2.4	6.3
Procedure-Maternal and Other	0.4	1.9	5.9	16.3	6.1	19.1	0.8	4.1	9.0	22.4	9.5	25.1
Procedure-Minor-All Other	16.7	77.7	9.4	26.0	10.6	33.1	13.4	68.4	6.8	17.0	7.5	19.8
Procedure-Oncology	0.5	2.3	1.1	3.0	0.9	2.8	0.7	3.6	1.2	3.0	1.0	2.6
Total Tests	**28.6**		**9.5**		**9.6**		**22.8**		**6.3**		**5.7**	
Tests-Other	3.2	11.2	2.9	30.5	1.6	16.7	4.9	21.5	3.6	57.1	1.9	33.3
Tests-Lab	25.4	88.8	6.6	69.5	8.0	83.3	17.9	78.5	2.7	42.9	3.8	66.7
Total Childhood Immunizations	**1.5**		**0.7**		**0.8**		**3.4**		**1.0**		**1.2**	
Total Exceptions/Unclassified	**0.7**		**0.8**		**0.6**		**0.5**		**0.6**		**0.1**	
Total Other	**1.6**		**2.6**		**2.0**		**2.2**		**3.5**		**2.7**	
Other-Injectable Drugs	1.2	75.0	2.1	80.8	1.6	80.0	1.8	81.8	2.9	82.9	2.2	81.5
Other-Other	0.4	25.0	0.4	15.4	0.4	20.0	0.3	13.6	0.6	17.1	0.5	18.5
Total	**100.0**		**100.0**		**100.0**		**100.0**		**100.0**		**100.0**	

*BETOS CPT-4/HCPCS procedure code system, the Health Care Financing Administration.

Comparisons of Medicare Payers

Table 19 presents a comparison of the distribution of services, payments, and work RVUs for traditional Medicare non-HMO services and Medicare HMO FFS services. Within Medicare, the largest proportion of services for both traditional and HMO coverage, over one third, is represented by E&M, with just a small difference between the percentages. Tests comprise the second highest proportion of services for both types of Medicare coverage, although HMO FFS services are 22 percent less likely to be tests than are traditional Medicare services. Imaging accounts for the third highest proportion of all traditional coverage services, at 12 percent, and the fourth highest proportion of all HMO services, at 14 percent. Procedures represent the third highest proportion of all HMO services and the fourth highest proportion of all non-HMO services. HMO FFS services are 32 percent more likely to be procedures relative to non-HMO services. Other services comprise the smallest proportions of total services for both payer types but are 11 percent more likely to occur in HMO FFS services.

As in the private sector, the greatest proportion of all payments for non-HMO services goes toward E&M, followed by procedures, while the reverse is true of Medicare HMO FFS payers. Compared to traditional Medicare payment shares, HMOs allocate 30 percent less to E&M and 42 percent more to procedures. At the other end of the spectrum, the proportion of payments devoted to tests is the smallest of all categories for both coverage types. Consistent with the difference seen in the service distribution, the HMO FFS payment share for tests is 23 percent smaller than the related payment share in traditional Medicare coverage. For both types of Medicare, imaging comprises roughly 13 percent of all payments, or the third highest proportion of the distribution. Other services form the second smallest proportions of payments for both payer types but this payment share is 12 percent greater for HMO FFS services than for non-HMO services.

Compared to the payment distributions, Medicare work RVUs – like private sector RVUs – are more concentrated in E&M and less concentrated in procedures, other services, and, most noticeably, in imaging. For both coverage types, E&M comprise the greatest proportion of work RVUs, followed by procedures. But relative to traditional Medicare coverage, the HMO FFS RVU share attributed to E&M is 15 percent smaller and the share allocated to procedures is 30 percent greater. This results from both the higher concentration of procedures in HMO FFS services and the greater service intensity of HMO procedures, discussed earlier. Whether serving private or Medicare patients, HMOs devote more FFS resources to procedures than do non-HMOs. Also as in the private sector, the greatest difference in work RVU shares for major BETOS categories occurs in tests. Tests rank third in RVUs in traditional Medicare coverage, which devotes 32 percent more total RVUs to tests relative to Medicare HMO FFS for which tests rank last in RVUs. The two coverage types devote virtually identical proportions of RVUs to imaging, approximately 7.5 percent. The proportion of all work RVUs devoted to other services ranks fifth in traditional Medicare, but ranks third in HMO FFS services since HMOs devote 15 percent more resources to this service than do non-HMOs.

The conditional probabilities for utilization for the two types of Medicare coverage in Table 19 show some interesting differences in E&M utilization. Office-based services are the most common E&M service (in service volume, payments and RVUs) but comprise much less of total E&M for Medicare patients than for private patients. Compared to traditional Medicare E&M services, Medicare HMO FFS services are more likely to be composed of E&M rendered by specialists and consultants, or delivered in emergency rooms or patients' homes and less likely to be E&M services provided to hospital or nursing home patients. For example, HMO FFS E&M payments and RVUs are about 12 and 13 percent more likely, respectively, to be for specialist/consultant care and 14 and 10 percent less likely, respectively, to be for hospital inpatient care than non-HMO E&M services. These differences in service mix result in the average intensity of E&M services being only slightly greater in the HMO FFS services, as discussed earlier.

The reason for the 27 percent greater service intensity of Medicare HMO FFS procedures compared to traditional Medicare procedures discussed earlier is reflected in the conditional probabilities. As in the private sector, minor procedures rank first in procedure payments and RVUs in non-HMO procedures but not in HMO FFS procedures, for which major cardiovascular procedures rank first in these measures. Non-HMO procedure payments and RVUs are 1.4 and 1.5 times as likely, respectively, to be for minor procedures as are HMO FFS procedures, while payments for cardiovascular procedures are 1.4 more common among HMO FFS procedures. Utilization (in service volume, payments and RVUs) of the other major procedure services is also more common in HMO FFS procedures, as are endoscopy, maternal/other procedures and oncology procedures. Besides minor procedures, ambulatory and anesthesia procedures are more common in non-HMO procedures. Additionally, payments and RVUs for eye procedures are more likely among the non-HMO procedures.

As in the private sector, echography services under imaging and tests are more frequently (in service volume, payments, and RVUs) provided to HMO patients. Heart imaging services are also more likely among the HMO imaging service. Even though non-HMO and HMO services are just about as likely to be for advanced imaging services, such as MRI and CAT scans, traditional Medicare coverage devotes greater proportions of its imaging payments and RVUs to this service than do Medicare HMOs. As in the private sector, utilization of laboratory tests is more common among non-HMO tests than in HMO tests by factors of 1.6 for payments and RVUs and 1.9 for service volume. The net result is that HMO FFS imaging services and tests are 10 and 13 percent, respectively, more intensive than non-HMO services, as discussed previously.

TABLE 19
DISTRIBUTION OF TOTAL SERVICES, PAYMENTS, AND WORK RVUs IN MEDICARE NON-HMO AND HMO BY SERVICE CATEGORY - 1998: PERCENTAGES AND CONDITIONAL PROBABILITIES (CP)

BETOS Category*	Non-HMO						HMO					
	Total Services		Total Payment		Total Work RVUs		Total Services		Total Payment		Total Work RVUs	
	%	CP	%	CP	%	CP	%	CP	%	CP	%	CP
Total E&M	**%36.6**		**%40.8**		**%49.1**		**%37.7**		**%28.7**		**%41.9**	
E&M-ER	1.3	%3.6	2.0	%4.9	2.8	%5.7	2.0	%5.3	2.6	%9.1	3.6	%8.6
E&M-Home	0.1	0.3	0.1	0.2	0.2	0.4	0.5	1.3	0.4	1.4	0.9	2.1
E&M-Hospital	7.1	19.4	10.4	25.5	12.2	24.8	6.6	17.5	6.3	22.0	9.4	22.4
E&M-Nursing Home	2.2	6.0	2.1	5.1	2.8	5.7	0.7	1.9	0.5	1.7	0.7	1.7
E&M-Office	18.3	50.0	15.4	37.7	18.2	37.1	19.4	51.5	10.5	36.6	14.9	35.6
E&M-Spclst/Consults	7.7	21.0	10.7	26.2	12.9	26.3	8.6	22.8	8.4	29.3	12.3	29.4
Total Imaging	**12.0**		**13.0**		**7.5**		**13.8**		**13.2**		**7.3**	
Imaging-Advanced (MRI&CAT)	1.4	11.7	4.1	31.5	2.1	28.0	1.6	11.6	3.2	24.2	1.9	26.0
Imaging-Echography	2.3	19.2	3.2	24.6	1.5	20.0	3.1	22.5	3.8	28.8	1.6	21.9
Imaging-Heart	0.3	2.5	0.2	1.5	0.2	2.7	0.6	4.3	0.5	3.8	0.3	4.1
Imaging-Other	0.3	2.5	0.4	3.1	0.5	6.7	0.3	2.2	0.7	5.3	0.5	6.8
Imaging-Standard	7.8	65.0	5.0	38.5	3.1	41.3	8.1	58.7	5.0	37.9	3.0	41.1
Total Procedures	**11.9**		**30.2**		**29.0**		**15.7**		**43.0**		**37.7**	
Procedure-Ambulatory	1.4	11.8	2.9	9.6	3.0	10.3	1.4	8.9	3.9	9.1	3.6	9.5
Procedure-Anesthesia	0.9	7.6	2.7	8.9	0.0	0.0	0.3	1.9	0.7	1.6	0.0	0.0
Procedure-Dialysis	0.4	3.4	0.9	3.0	0.9	3.1	0.4	2.5	0.7	1.6	0.7	1.9
Procedure-Endoscopy	0.8	6.7	3.5	11.6	3.4	11.7	1.6	10.2	6.9	16.0	5.5	14.6
Procedure-Eye	0.3	2.5	3.7	12.3	3.5	12.1	0.4	2.5	3.4	7.9	3.6	9.5
Procedure-Major-Cardiovascular	0.6	5.0	4.8	15.9	5.2	17.9	0.9	5.7	8.7	20.2	6.9	18.3
Procedure-Major-Orthopedic	0.1	0.8	2.3	7.6	2.5	8.6	0.3	1.9	4.6	10.7	3.7	9.8
Procedure-Major-Breast, Colectomy	0.1	0.8	1.2	4.0	1.4	4.8	0.2	1.3	2.3	5.3	2.4	6.4
Procedure-Maternal and Other	0.3	2.5	1.7	5.6	2.2	7.6	0.5	3.2	3.8	8.8	3.8	10.1
Procedure-Minor-All Other	5.7	47.9	4.1	13.6	4.7	16.2	7.3	46.5	4.1	9.5	4.1	10.9
Procedure-Oncology	1.2	10.1	2.3	7.6	2.1	7.2	2.6	16.6	4.0	9.3	3.4	9.0
Total Tests	**33.0**		**7.7**		**7.9**		**25.6**		**5.9**		**5.4**	
Tests-Other	5.7	17.3	3.4	44.2	1.9	24.1	8.5	33.2	4.1	69.5	2.1	38.9
Tests-Lab	27.3	82.7	4.2	54.5	6.0	75.9	17.2	67.2	1.8	30.5	3.2	59.3
Total Childhood Immunizations	**0.0**		**0.0**		**0.0**		**0.1**		**0.0**		**0.0**	
Total Exceptions/Unclassified	**0.8**		**0.1**		**0.1**		**0.5**		**0.8**		**0.1**	
Total Other	**5.6**		**8.2**		**6.5**		**6.5**		**8.5**		**7.5**	
Other-Injectable Drugs	4.0	71.4	5.0	61.0	4.2	64.6	4.8	73.8	6.3	74.1	5.2	69.3
Other-Other	1.7	30.4	3.3	40.2	2.3	35.4	1.8	27.7	2.2	25.9	2.4	32.0
Total	**100.0**		**100.0**		**100.0**		**100.0**		**100.0**		**100.0**	

* BETOS CPT-4/HCPCS procedure code system, the Health Care Financing Administration.

Conclusions

Considerable differences exist between the four payer types in the composition of practitioner services reimbursed on a FFS basis during 1998. The underlying sources of these differences include the unique nature of the HMO FFS services, age differences of the insured populations, different reimbursement rates for services, and different demographic characteristics of the insured populations related to enrollment preferences.

The incomplete nature of the HMO services make it difficult to identify service utilization differences that result from differences in treatment practices by delivery systems, non-HMO and HMO. The limited set of services included in the private and Medicare HMO data makes comparisons between the non-HMO and HMO services difficult. HMO data used in this chapter includes services reimbursed on an FFS basis, but excluded all capitated services which are likely to be more routine services. Even though this chapter's analysis of HMO services is more specialized than the full set of services, it is difficult when generalizing about the level of specialization because FFS reimbursement varies by plan and by geographic region within the plan. Due to these limitations, any conclusions are necessarily preliminary.

MHCC found that low-payment, high volume services are twice as common in the non-HMO lists as in the HMO FFS lists, evidence of the more specialized nature of HMO FFS services. Average per recipient service utilization, which is expected to be lower in HMO patients due to the absence of capitated services, is not uniform across the types of services mainly due to the nature of the HMO FFS services. However, in the private payers, there is no delivery system difference in the average number of immunizations/other services, which may be at least partly a consequence of HMOs choosing to reimburse immunizations on a FFS basis so they can monitor this information for use in meeting HEDIS reporting requirements. Average use of tests by HMO recipients is especially low for both private and Medicare patients. The Commission cannot state definitely whether the reduced level of tests is attributable to tighter management of utilization or of HMO use of capitation for these services.

Overall, HMO services tend to be more complex, or service intensive, than non-HMO services. Among patients insured by private plans, greater service intensity is limited to procedures, which are 71 percent more intensive than non-HMO services, and E&M services. HMO services among Medicare patients are more intensive regardless of service category.

MHCC found that significant causes for payment pattern differences are the complexity of the mix of services and the rate of reimbursement for those services. The procedures category in the BETOS has the highest per recipient reimbursement among HMO patients, while in the non-HMO settings, E&M services have the highest mean reimbursement. In private payers, this difference is constrained somewhat by the fact that HMO reimbursement per work RVU – which overall is only 6 percent below the non-HMO rate – for procedures is 12 percent below the respective non-HMO rate suggesting that HMOs are more aggressive in obtaining FFS discounts for surgical

services. Conversely, in Medicare, the significance of procedures is exaggerated in reimbursements because HMOs' reimbursement rate for procedures is 25 percent higher than the traditional Medicare rate, although overall, the HMO rate is just 15 percent higher.

Age differences, first discussed in Chapter 2, are the primary source of differences in service utilization between private and Medicare non-HMO services. Age differences also contribute to delivery system differences among Medicare patients. Younger Medicare HMO patients have the most obvious comparison of high aggregate payment services. Service utilization differences in the private sector may also reflect some age differences. The higher concentration of children in private HMO recipients contributes to the similarities in the mean immunization/other services utilization discussed earlier. The higher percentage of young adults (18-34) among HMO recipients is likely a factor in a greater significance of obstetrical care among high aggregate payment services for HMOs compared to non-HMOs.

Some differences in utilization may be related to enrollment preferences. The greater significance of obstetrical care in HMO FFS services, cited above, could also result from a preference for HMO enrollment by women who are, or expect to become, pregnant. Because HMOs provide more comprehensive coverage of pregnancy and well-baby care, the enrollees would incur lower out-of-pocket expenditures in HMOs compared to the usual non-HMO benefit package. The projected savings become even more significant in cases where more care is required, i.e., complicated pregnancies and sick newborns. HMO recipients also appear to have a greater likelihood of complicated pregnancies than non-HMO recipients (Chapter 2). This is supported by the high aggregated payment analysis with cesarean delivery ranking higher and accounting for a greater share of total payments in private HMO FFS than in non-HMOs. The high aggregate payment analysis also offers possible evidence of treatment practice differences related to delivery system.

One difference in utilization may be related to treatment practices. In Medicare non-HMO recipients, the most common invasive cardiac procedure is coronary artery bypass graft, whereas for the Medicare HMO FFS recipients, the most common invasive cardiac procedure is coronary artery dilation. This difference may represent a more conservative approach to treatment on the part of HMOs, but it also could be related to the younger age of HMO FFS recipients. This result is preliminary; a more detailed analysis is needed before any definitive conclusions can be reached.